

# PATENT SPECIFICATION

708,633



Date of Application and filing Complete Specification: Jan. 16, 1951.

No. 1219/51.

Application made in Germany on Feb. 2, 1950.

Complete Specification Published: May 5, 1954.

Index at acceptance:—Class 146(3), A11A, A11D(1: 2).

## COMPLETE SPECIFICATION

### Improvements in Fountain Pens

I, THEODOR KOVÁCS, of Klopstockstrasse 5, Hanover, Germany, of Hungarian nationality, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to ink feeding means for fountain pens with an air duct located on the nib side of the feed bar and equipped in its bottom with ink grooves, and consists primarily in the provision of longitudinally spaced enclosed annular chambers for the accommodation of surplus ink in direct communication with the air duct, in the part of the feed bar that is inserted in the neck or extension of the barrel.

Further features of the invention concern the formation of the overflow chamber and of the feed bar.

One constructional example of a feed bar according to the invention is illustrated in the accompanying drawing, in which:—

Figure 1 shows a view of a feed bar according to the invention;

Figure 2 shows a longitudinal section through the barrel extension of a fountain pen equipped with the feed bar according to Figure 1, in the plane of symmetry;

Figure 3 shows the cross section of the feed bar on the line III—III in Figure 1; and

Figures 4 and 5 show cross sections on the lines IV—IV and V—V in Figure 2.

In the drawings, 1 is the barrel extension holder neck, 2 the ink reservoir, 3 the feed bar, 4 the pen nib, with an air-supply hole 5, and 6 a nib retaining ring. The feed bar is equipped on its side adjacent to the nib with an air duct 7, in the bottom of which are arranged capillary grooves 8 serving for conveying the ink. The air duct 7 tapers upwards, that is to say, towards the ink reservoir, so considerably that the capillary potential of the duct in the writing posi-

tion increases in an upward direction. The part of the feed bar projecting beyond the extension of the barrel is provided with longitudinal chambers 9 and 10 adapted for the accommodation of surplus ink. The part of the feed bar inserted in the barrel extension is equipped with two broad annular grooves which form two annular chambers 11 and 12 in the barrel extension, which are separated from one another by a rib 13. The two annular chambers are in direct communication with the air duct 7. They taper conically towards the reservoir, and have in the writing position a greater capillary potential than the air duct at their level. The capillary potential of the upper annular chamber 12 is greater than the capillary potential of the lower annular chamber 11, and the average capillary potential of the lower annular chamber is in its turn greater than the average capillary potential of the longitudinal chambers 9 and 10. The air duct 7 opens into the upper annular chamber, which is bounded in an upward direction by a rib 14. The ink grooves 8 provided in the bottom of the air duct extend beyond the rib 14 right to the upper end of the feed bar. The rib 14, on the side of the feed bar remote from the nib, is formed with a gap 15, which allows air to pass out of the upper annular chamber into an annular duct 16 beyond the rib 14. The annular duct 16 tapers eccentrically towards the nib side, and has a greater capillary potential than the upper annular chamber. The two arcs of the annular duct open on the nib side of the feed bar into a comparatively deep and wide longitudinal groove 17 provided there, which extends from the rib 14 right to the upper end of the feed bar. The annular chambers 11 and 12 communicate by capillary grooves 18 and 19 extending round them with the capillary grooves 8 that serve for delivering ink. According to the invention the longitudinal chambers 9 and 10, in the region

[Price 2/8]

of their upper terminations, are also connected, by a circularly extending capillary groove 20 which penetrates through the side walls of the air duct 7, with the ink grooves 8.

The surplus ink that passes out of the ink reservoir as a result of heating or from any other cause fills up first the upper annular chamber and then the lower one, and gradually fills also the longitudinal chambers 9 and 10. The lower end of the air duct 7, which has the smallest capillary potential, fills last. When writing, the surplus ink is used in the reverse sequence. Finally, the upper annular chamber is completely emptied, and only after this has occurred can the replacement air penetrate through the gap 15 into the annular duct 16.

If the pen is shaken with the nib directed downwards, the liquid impulses are largely checked by the eccentrically tapering annular duct 16 disposed transversely to the longitudinal axis. Ink which as a result of a shock or impulse has penetrated into the eccentric air duct 16 and beyond it into the rear part of the rear annular chamber 12 is sucked back through the eccentric air duct into the reservoir chamber as a result of the reaction effect following the shock or impulse, whereby the impulses are compensated and sputtering of the pen when shaken is largely prevented.

A further and important advantage is presented by the two annular chambers 11 and 12 in that they take up ink which is in the air duct 7 arranged on the nib side of the feed bar and which would otherwise be ejected, when the cap of the pen was removed with the pen in an upright position, if a pressure in excess of the ambient atmospheric pressure had accumulated in the reservoir.

When the pen is in an upright position, any ink which may be in the longitudinal chambers 10 flows back into the annular chambers 11 and 12, since the longitudinal chambers 10 are connected, by means of the capillary groove 20, with the ink grooves 8 in the bottom of the air duct 7.

The pen nib and the feed bar are firmly connected with one another by the retaining ring. The unit thus formed is withdrawably inserted into the bore of the barrel extension. Since the parts of the feed bar that regulate the inflow are located above the retaining ring, they can in case of need, after withdrawal of the said unit, be easily and thoroughly cleaned.

The invention is not restricted merely to the constructional example illustrated.

What I claim is:—

1. A feed bar for fountain pens, with an air duct arranged on the nib side of the feed bar and equipped in its bottom with ink grooves, characterised by longitudinally spaced enclosed annular chambers (11, 12), adapted to accommodate and release surplus ink, in the part of the feed bar inserted in an extension of the barrel, said chambers being in direct communication with the air duct (7), and having a greater capillary potential than the air duct at the level of said chambers.

2. A feed bar for fountain pens as claimed in claim 1, characterised by the feature that said chambers are two in number and the upper annular chamber (12) has a greater capillary potential than the lower annular chamber (11).

3. A feed bar for fountain pens as claimed in claim 1, characterised by the feature that the annular chambers taper conically toward the ink reservoir.

4. A feed bar for fountain pens as claimed in claim 1, characterised by the feature that the top annular chamber (12) is bounded towards the ink reservoir by a rib (14), which on the nib side of the feed bar, is interrupted only by the ink grooves (8).

5. A feed bar for fountain pens as claimed in claim 4, characterised by an annular duct (16) on the upper side of the rib (14), which communicates by a gap (15) in the rib located on the side of the feed bar remote from the nib with the top annular chamber, and is adapted for the conveyance of air.

6. A feed bar for fountain pens as claimed in claim 5, characterised by a longitudinal groove on the nib side of the feed bar, extending from the rib (14) to the upper end of the feed bar and connecting the annular duct (16) with the reservoir space.

7. A feed bar for fountain pens as claimed in claim 5, characterised by the feature that the annular duct (16) tapers eccentrically towards the nib side of the feed bar.

8. A feed bar for fountain pens as claimed in claim 7, characterised by the feature that the annular duct (16) has a greater capillary potential than the top annular chamber (12).

9. A feed bar for fountain pens, as claimed in claim 1, characterised by the feature that the annular chambers are equipped each with an encircling capillary groove (18, 19), which communicates with the ink grooves (8) in the bottom of the air duct (7).

10. A feed bar for fountain pens as claimed in claim 1, characterised by the feature that longitudinal chambers (9 and 10) arranged in that part of the feed

bar which projects from the barrel extension communicate by an encircling capillary groove (20) in the region of their upper terminations with the ink grooves 5 (8).

11. A feed bar for fountain pens, substantially as hereinbefore described with reference to the accompanying drawings.

MARKS & CLERK.

Leamington Spa: Printed for Her Majesty's Stationery Office, by the Courier Press.—1954.  
Published at The Patent Office, 25, Southampton Buildings, London, W.C.2, from which  
copies may be obtained.

This drawing is a reproduction of the Original on a reduced scale.

